What is claimed is:

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- 1. An semiconductor optical integrated device, comprising:
- a light-generating region for generating light with a predetermined wavelength; and
- a light-modulating region having a first facet for outputting light generated in said light-generating region and modulated in said light-modulating region,

wherein said first facet provides a coating including a first layer closest to said light-modulating region and a second layer, said first layer having a first refractive index and said second layer having a second refractive index greater than said first refractive index, and

wherein said coating shows an anti-reflection characteristic at said predetermined wavelength.

- 2. The semiconductor optical integrated device according to claim 1, wherein said first layer is made of a material selected from a group of silicon nitride, silicon oxide, silicon oxide
- 3. The semiconductor optical integrated device according to claim 2, wherein said second layer is made of a material selected from a group of titanium oxide and tantalum oxide.
 - 4. The semiconductor optical integrated device according to claim 1, wherein said second layer is made of a material selected from a group of titanium oxide and tantalum oxide.

- 5. The semiconductor optical integrated device according to claim 1, wherein said light-generating region and said light-modulating region further comprise an InP substrate, an n-type InP layer provided on said InP substrate, an active layer provided on said n-type InP layer, and a p-type InP layer provided on said active layer.
 - 6. An semiconductor optical device, comprising:
- a light-generating region for generating light with a predetermined wavelength;
 - a first facet; and

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a second facet, said first facet and said second facet sandwiching said light-generating region therebetween,

wherein said first facet provides a coating including a first layer closest to said light-generating region and a second layer, said first layer having a first refractive index and said second layer having a second refractive index greater than said first refractive index, and

wherein said coating shows an anti-reflection characteristic at said predetermined wavelength.

- 7. The semiconductor optical device according to claim 6, wherein said first layer is made of a material selected from a group of silicon nitride, silicon oxide, silicon oxi-nitride and aluminum oxide.
- 8. The semiconductor optical device according to claim 7, wherein said second layer is made of a material selected from a group of titanium oxide and tantalum oxide.

9. The semiconductor optical device according to claim 6, wherein said second layer is made of a material selected from a group of titanium oxide and tantalum oxide.

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10. The semiconductor optical device according to claim 6, wherein said light-generating region further comprise an InP substrate, an n-type InP layer provided on said InP substrate, an active layer provided on said n-type InP layer, and a p-type InP layer provided on said active layer.

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